

R E M A R K S

Reconsideration of this application, as amended, is respectfully requested.

RE: INTERVIEW

The Examiner's cooperation in reviewing proposed amendments to claims 1, 45 and 46 and draft arguments, and the Examiner's indication that the proposed amendments to claims 1, 45 and 46 would overcome the current prior art rejection, are respectfully acknowledged.

THE CLAIMS

Claims 1, 45 and 46 have been amended as discussed with the Examiner to clarify the structure and operation of the total internal reflection fluorescence microscope of the present invention, as supported by the disclosure in the specification at, for example, the top of page 20.

In addition, withdrawn claims 20 and 25 have been amended to make minor grammatical improvements.

No new matter has been added, and it is respectfully requested that the amendments to the claims be approved and entered.

THE PRIOR ART REJECTION

Claims 1, 45 and 46 were rejected under 35 USC 103 as being obvious in view of Axelrod ("Total Internal Reflection Fluorescence at Biological Surfaces"). This rejection, however, is respectfully traversed with respect to the claims as amended hereinabove.

According to the present invention as recited in clarified independent claim 1, the mirror moving section moves the reflection mirror in a translatory manner with respect to the condensing lens, and when the mirror moving section moves the reflection mirror with respect to the condensing lens, an incidence position of the laser beam on the condenser lens is changed, such that an incidence angle, at a boundary of the specimen, of the laser beam emitted from the condenser lens is changed.

In a similar manner, according to the present invention as recited in clarified independent claims 45 and 46, the mirror moving section moves the reflection mirror in a translatory manner in a direction that is substantially perpendicular to a light path of the transmitted illuminative light from the light source, and when the mirror moving section moves the reflection mirror, an incidence position of the laser beam on the condenser lens is changed, such that an incidence angle, at a boundary of

the specimen, of the laser beam emitted from the condenser lens is changed.

As recited in each of independent claims 1, 45 and 46, the total internal reflection fluorescence microscope of the present invention comprises a condenser lens, which both has a numerical aperture that makes possible total internal reflection and which guides a transmitted illuminative light, which is emitted from a light source (e.g., a transmitted illuminative light source 31 in Fig. 1), into the specimen.

In order to perform total internal reflection fluorescence (TIRF) observation, according to the present invention as recited in independent claims 1, 45 and 46, a laser beam is output from a laser oscillation unit and caused to be incident at a vicinity of an outermost portion of the condenser lens.

Thus, according to the present invention as recited in independent claims 1, 45 and 46, both transmitted illuminative light and a laser beam for total internal reflection fluorescence observation may be transmitted to the sample via the condenser lens.

The Examiner asserts that prism P of Axelrod is a condenser lens in the manner of the present invention as recited in claims 1, 45 and 46. And the Examiner asserts that the prism P of Axelrod is provided both to transmit transmitted illuminative light and to perform total internal reflection fluorescence

observation. It is respectfully pointed out, however, that according to Axelrod, the prism is "mounted on the holder that would normally carry a microscope condenser" (emphasis added). That is, according to Axelrod, the prism is provided instead of a condenser lens. In addition, according to Axelrod, the laser light source is provided so that the beam emitted therefrom enters the microscope "through the port normally reserved for the transmitted illuminative light source" (emphasis added).

Thus, Fig. 5 of Axelrod is directed to a modification of a standard microscope to perform TIRF observation by removing the components provided for transmitted illuminative light, and replacing the transmitted illuminative light source and the condenser lens with a laser light source and a prism.

Accordingly, the prism of Axelrod is clearly not a condenser lens, which both has a numerical aperture that makes possible total internal reflection and which guides a transmitted illuminative light, which is emitted from a light source, into the specimen.

The Examiner points out on page 3 of the Office Action that the lens (see Fig. 5) of Axelrod is movable. And the Examiner asserts that this lens is movable to "change the angle of internal reflection thus changing the illumination that is incident to the specimen." However, this assertion by the Examiner is explicitly contradicted by Axelrod. See the bottom

of page 103 of Axelrod, which states "[t]he disadvantage is that the incidence angle is not adjustable without switching to another prism with a different slope angle." Thus, Axelrod explicitly discloses that the incidence angle cannot be changed without changing the prism in the structure of Fig. 5 thereof.

By contrast, according to the present invention as recited in clarified amended independent claim 1, the mirror moving section moves the reflection mirror in a translatory manner, with respect to the condensing lens, in a direction that is substantially perpendicular to a light path of the transmitted illuminative light from the light source, and when the mirror moving section moves the reflection mirror with respect to the condensing lens an incidence position of the laser beam on the condenser lens is changed, such that an incidence angle, at a boundary of the specimen, of the laser beam emitted from the condenser lens is changed.

In addition, according to the present invention as recited in clarified amended independent claims 45 and 46, the mirror moving section moves the reflection mirror in a translatory manner in a direction that is substantially perpendicular to a light path of the transmitted illuminative light from the light source, and when the mirror moving section moves the reflection mirror, an incidence position of the laser beam on the condenser lens is changed, such that an incidence angle, at a boundary of

the specimen, of the laser beam emitted from the condenser lens is changed.

It is respectfully submitted that Axelrod clearly does not disclose, teach or suggest the features of the present invention as recited in clarified amended independent claims 1, 44 and 45, and in fact discloses that changing the incidence angle is not possible with the structure shown in Fig. 5 thereof.

Accordingly, it is respectfully submitted that clarified amended independent claims 1, 45 and 46, and each of claims 4-20 and 23-44 depending from amended independent claim 1, all clearly patentably distinguish over Axelrod, under 35 USC 103.

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Entry of this Amendment, allowance of the claims and the passing of this application to issue are respectfully solicited.

If the Examiner has any comments, questions, objections or recommendations, the Examiner is invited to telephone the undersigned for prompt action.

Respectfully submitted,

/Douglas Holtz/

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